

DECLARATION AND POWER OF ATTORNEY - PATENT APPLICATION

As a below named inventor, I hereby declare that my citizenship, postal address and residence are as stated below; that I verily believe I am the original, first and sole inventor (if only one inventor is named below) or a joint inventor (if plural inventors are named below) of the invention entitled:

PROCESS FOR PRODUCING A SURFACE LAYER

the specification of which

X is attached hereto, or
was filed on _____ as Application Serial No. _____ and
was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose all information known to be material to patentability as defined in 37 CFR §1.56. I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s) Priority Claimed

100 36 264.8 Germany 26 July 2000 Yes
(Number) (Country) (Day/Month/Year)

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information known to be material to patentability as defined in 37 CFR §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.) (Filing Date) (Status)

I hereby appoint as principal attorneys Herbert I. Cantor, Reg. No. 24,392; James F. McKeown, Reg. No. 25,406; Donald D. Evenson, Reg. No. 26,160; Joseph D. Evans, Reg. No. 26,269; Gary R. Edwards, Reg. No. 31,824; Jeffrey D. Sanok, Reg. No. 32,169 to prosecute and transact all business in the Patent and Trademark Office connected with this application and any related United States and international applications. Please direct all communications to:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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PROCESS FOR PRODUCING A SURFACE LAYER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to pending U.S. patent application Serial No. _____ filed on July 26, 2001, corresponding to and claiming the priority of German application 100 36 262.1.

BACKGROUND AND SUMMARY OF THE INVENTION

[0002] This application claims the priority of German application 100 36 264.8, filed July 26, 2000, the disclosure of which is expressly incorporated by reference herein.

[0003] The invention relates to a process for producing a surface layer with embedded inter-metallic phases.

[0004] German Patent Document DE 197 50 599 A1 discloses a design element which comprises an Al_2O_3 -containing surface layer with embedded high-temperature-resistant aluminides. To produce a design element of this type, a sintered, porous ceramic body is placed in a die-casting mold and is infiltrated with aluminium under pressure. During the infiltration, the ceramic body reacts with the aluminum, forming the above-mentioned aluminides. The design element generally only fills parts of the component, and consequently, the component consists partially of aluminum and

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WHAT IS CLAIMED IS:

1. Process for producing a surface layer with embedded intermetallic phases, the process comprising the acts of:
 - applying a layer comprising a metal and a ceramic to a substrate element,
 - causing a reaction to take place between the metal and the ceramic of the layer as a result of energy being introduced during the application of the layer or as a result of a subsequent introduction of energy, and
 - producing a resultant surface layer having intermetallic phases being formed.
2. Process according to Claim 1, wherein the metal of the layer is one of aluminium and an aluminium alloy.
3. Process according to Claim 1, wherein the ceramic of the layer is an oxide ceramic.
4. Process according to Claim 2, wherein the ceramic of the layer is an oxide ceramic.
5. Process according to Claim 1, wherein the layer is applied via one of a thermal spraying process, a slip technique, or a painting technique.

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